Name: Date:

Fossil Diatoms

Introduction: Diatoms are a family of microscopic phytoplankton. Diatoms are unique in that different species live inside of intricate "glass houses." Because of this feature, diatoms fossilize readily. Vast deposits of fossil diatoms are found throughout the earth. This diatomaceous earth has many commercial uses.

In this lab, you will view fossilized diatoms in a small sample of diatomaceous earth. Diatomaceous earth is a remarkable, all-natural product made from tiny fossilized

water plants. Diatomaceous Earth is a naturally occurring siliceous sedimentary mineral compound from microscopic skeletal remains of unicellular algae-like plants called diatoms. These plants have been part of the earth's ecology since prehistoric times. It is believed that 30 million years ago the diatoms built up into deep, chalky deposits of diatomite. The diatoms are mined and ground up to render a powder that looks and feels like talcum powder to us. It is a mineral based pesticide. DE is approximately 3% magnesium, 33% silicon, 19% calcium, 5% sodium, 2% iron and many other trace minerals such as titanium, boron, manganese, copper and zirconium. Diatomaceous Earth is a natural (not calcined or flux calcined) compound. Diatomaceous Earth is a natural grade diatomite. However, the continual breathing of any dust should he absolutely avoided.

How does it work?

To insects DE is a lethal dust with microscopic razor sharp edges. These sharp edges cut through the insect's protective covering drying it out and killing them when they are either dusted with DE or if it applied as a wettable powder spray. If they ingest the DE it will shred their insides.

- Comes with complete instructions for use on insects, flea and lice control, bed bugs, grain storage, parasite control in animals (use in feed) and fly control.

What insects can DE be used for?

Diatomaceous Earth may be used as a barrier to control adult flea beetles, sawfly, coddling moth, twig borer, thrips, mites, cockroach, slugs, snails and many other insects such as: Aphids, thrips, earwigs, silverfish, and ants. Can be used for bedbugs, cabbage root flies, carrot root flies, fleas, pillbugs, ticks and is helpful in dealing with fungus gnats. Indoor and **Outdoor Application:** Sprinkle a light layer of DE in areas where pests frequent, including under stoves, cabinets, sinks, garbage cans, window and door frames and sills, entrance ways, sewer pipes and drains, and in cracks and crevices. Repeat treatment as needed.

Carpet Beetles: Thoroughly dust along baseboards, carpet edges, under furniture, carpet, and rugs, and in closets and shelving.

Bedbugs: Take apart bed and dust joints and channels. Dust any hollow tubing and the interior framework as well as the mattress and all cracks in the room.

Fleas: Thoroughly dust carpets and pet's bedding and sleeping areas, as well as cracks and baseboards. It also can be rubbed into your pet's fur.

Flies: Thoroughly dust areas where flies frequent (walls, straw bedding, livestock pens).

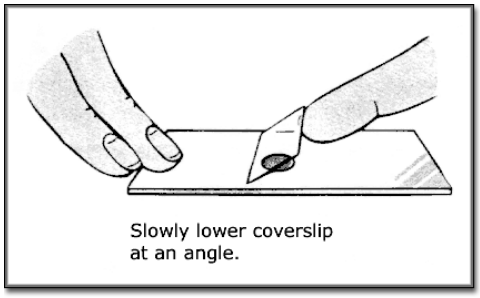
It also can be applied to livestock coat as an insect repellent/contact insecticide.
Fly Larva: Keeps fly larvae from developing in manure, which makes a significant reduction in the fly population.

Procedure:

1. Obtain a glass slide and coverslip.

2. Place a small amount of diatomaceous earth on the slide. You only need a tiny bit. **Be careful not to inhale the sample.**

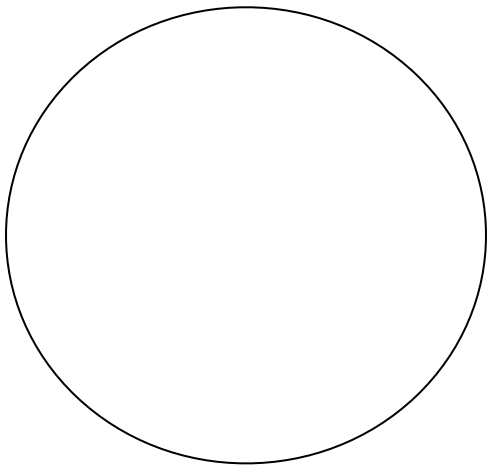
3. Make a wet mount of the diatomaceous earth. Add a drop of water to the earth and place the coverslip over the sample. **In order to avoid a large amount of trapped air under the slip, use the method shown below:**



4. Starting on low power, bring the sample of earth into focus under the microscope.

5. Find a fossilized diatom under the microscope. Once you have found it, call the teacher over to make sure you are actually looking at a diatom.

6. Draw the diatom below:



7. Clean up. Wash off the coverslip and slide and leave them next to the sink. Turn off the microscope and wrap the cord around the arm. Put the dust cover back on the microscope.

8. Answer the following questions:

a. Why does a diatoms “glass house” allow it to fossilize so easily?

b. Describe the two types of body shapes that diatoms can take. Draw an example of each.

c. Based on this lab, and your knowledge of marine biology, do you think there are a lot of diatoms in the ocean or relatively few? Cite specific evidence?

d. How old do you think the fossil diatom you have looked at is? (which geologic age)

e. What are some commercial uses of diatomaceous earth?

f. Why is diatomaceous earth useful in pool filters?

g. Describe the two method diatoms use for reproduction. Why is this an important adaptation for their survival?